

Factors influencing probiotics recommendation among pediatricians in Indonesia

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Abstract

Purpose: To help pediatrician utilize probiotic use correctly, it is important for them to keep updated about new knowledge through various sources and methods. This study aimed to evaluate clinical behavior and factors influencing pediatricians to consider probiotic recommendation in infants and toddlers patients.

Patients and methods: A cross-sectional study conducted to 99 pediatricians attended Probiotic Summit in Jakarta on July 2018. Data collection aimed to gather characteristics of the subject's age, employment and affiliation status and years having pediatric practice through self-administered questionnaire. The current knowledge, clinical behavior and others factors influencing pediatricians to consider recommendation collected using modified 12-items questionnaire by Legare et al, 2014

Results: about 99 pediatricians participated in the study; of which 58 subjects worked in private hospital and 41 subjects were government hospital-based pediatricians. Majority of subjects were aged between 40–60 years old and 71% had been worked in pediatric clinical practice for more than 10 years. Almost all of subjects showed confident with scientific evidences (99%) and agreement on ethical importance of probiotic in infants and toddlers (98%), which was reflected to their positive prescribing consideration. From self-assurance perspective, 97% of subjects convinced with probiotic usage in infants and toddler, and hence consider to prescribe probiotic to their patients [OR (CI95%):0.50 (0.12–1.99); P=0.02]. The multivariate analysis comparing the outcome variables to subject's consideration to prescribe found that knowledge (P=0.05), ethical consideration (P<0.001), self-assurance (P<0.001), clinical behavior (P<0.001), and attitude (P<0.001) were factors that strongly associated with subject's consideration to prescribing probiotic to their patients.

Conclusion: Knowledge, scientific evidences and ethical point of view were key factors influencing pediatricians to recommend probiotic to their patients.

Introduction

A balanced bacterial gut colonization in early life has a long-term influence on the health status because a matures the gut mucosal barrier, contributes to a healthy development of the immune system and prevents infections. The gut microbiota development in breast- and formula-fed infants differs, because of the differences in composition between both feeding. While breastmilk contains a large amount of oligosaccharides and some probiotics, standard non-supplemented infant formula does not [1]. Manipulation of the gut microbial composition in formula-fed infants through pre- and probiotic supplementation is considered to support health [2-5].

The Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO) define a probiotic as “live micro-organisms which, when administered in adequate amounts, confer a health benefit on the host [6]. Pooled data on studies of probiotic-supplemented infant or follow-on formula shows that supplementation of infant formula with *Bifidobacterium* (*B.*) *lactis* (single or in combination) is associated with a reduced risk of non-specific gastrointestinal infections in children [7,8].

Therefore, it is important to update health care professionals such as pediatricians about the evolution of the knowledge on the effects of probiotic administration during early life through various sources and methods such as continuous medical education (CME), lectures, workshops, case-based learning, clinical experiences, preceptorships,

and even direct information via interaction with representatives from nutrition companies [9,10]. CME interventions have limited impact [11].

Studies show that the prescribing pattern of physicians strongly depend on a series complex factors, including personal motivation as well as external factors such as requests from patients [12]. Doctors' prescription patterns are not standardized but are dynamic and individual [13-15].

This study aimed to evaluate the attitude of pediatricians to recommend probiotics, specifically to infants and toddlers.

Material and methods

Data were collected from 99 pediatricians attending a Probiotic Summit in Jakarta in July 2018. Data collection aimed to gather information on the age, employment and affiliation status, and years in pediatric practice through a questionnaire.

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The current knowledge, clinical behavior and others factors influencing pediatricians to consider prescription of probiotics were collected using a modified 12-items questionnaire which was developed by Legare [16]. Knowledge of probiotic is all information that a person possesses or accrues after education, obtain from series of self-administered questionnaire from probiotic lecture. Attitude and clinical behavior is the way in which a person responds to a certain set of conditions, related to the use of probiotic in infants and toddlers. Self-assurance measures how convinced the pediatrician is regarding the effects of probiotics, while confidence of scientific evidence indicates the belief of pediatricians on the clinical data and scientific information [17].

All of the influencing factors were indicated through the adapted questionnaire. A chi-square test was used to analyze cross-tabulated data for bivariate analysis and general linear model for multivariate analysis, using SPSS version 20, with all outcome variables taken at the 5% significance level ($P < 0.05$) and within 95% confidence interval. The study protocol approved by ethics committee of Faculty of Medicine Universitas Indonesia, letter number KET-296/UN2.F1/ETIK/PPM.00.02/2019.

Results

A total of 99 pediatricians participated in this research; 58 worked in a private hospital and 41 were governmental hospital-based pediatricians (Table 1).

Table 2 shows that almost all participants perceived to be confident with scientific evidence (99%) and agreed on the ethical importance of recommending probiotics in infants and toddlers (98%). From the self-assurance perspective, 97% of the subjects were convinced of the benefits of probiotic use in infants and toddler, and hence consider prescribing probiotics to their patients [OR (CI95%):0.50 (0.12-1.99); $P=0.02$]. However, about half of the participants said to consider to not prescribe probiotics if peers informed them about negative outcome.

Table 3 shows the outcome of a multivariate analysis of different variables regarding when to prescribe probiotics: knowledge ($P=0.05$), ethical consideration ($P < 0.001$), self-assurance ($P < 0.001$), clinical behavior ($P < 0.001$), and attitude ($P < 0.001$) were associated with the consideration to prescribe probiotics.

Table 1. Demographic and occupational characteristic of subject

Variable	n (%) n = 99
Gender	
Male	43 (43)
Female	56 (57)
Age (years old)	
> 60	4 (4)
50–60	25 (25)
40–50	51 (52)
30–40	19 (19)
Duration of clinical practice (years)	
< 5	8 (8)
5–10	21 (21)
10–15	37 (38)
> 15	33 (33)
Affiliation	
Government hospital	41 (41)
Private hospital/clinic	58 (59)

Table 2. Cross tabulation of factors influencing prescribing among pediatricians

Variable	Consider to prescribe n (%)	Not consider to prescribe n (%)	OR (CI95%)	P
Self-assurance				
Convinced	96 (97)	1 (1)	0.50 (0.12-1.99)	0.02
Not convinced	1 (1)	1 (1)	-	-
Confident with the scientific evidences				
Yes	98 (99)	0 (0)	-	0.01
No	1 (1)	0 (0)	-	-
Practicality of probiotic usage				
Practical	84 (85)	1 (1)	-	0.85
Not practical	14 (14)	0 (0)	-	-
Ethical				
Agree	97 (98)	0 (0)	-	0.02
Not agree	1 (1)	1 (0)	-	-
Peer Influence				
Positive	45 (45)	1 (1)	1.01 (0.98-1.06)	0.53
Negative	1 (1)	52 (53)	-	-
Knowledge				
Good (≥ 80)	38 (38)	1 (1)	0.97 (0.92-1.03)	0.39
Average (< 80)	59 (60)	1 (1)	-	-
Attitude				
Positive	97 (98)	1 (1)	-	0.02
Negative	1 (1)	0 (0)	-	-
Behavior				
Positive	92 (92)	0 (0)	-	0.07
Negative	6 (7)	1 (1)	-	-

Table 3. Logistic multivariate regression model on factors associated to subjects consideration to prescribe probiotic

Variables	OR (CI95%)	R2	P
Peer influence	1.00 (0.04-1.99)	0.01	0.35
Knowledge	1.00 (0.19-1.80)	0.02	0.05
Ethical consideration	0.99 (0.97-1.01)	0.49	< 0.001
Self-assurance	0.99 (0.97-1.00)	1.00	< 0.001
Practicality	0.14 (0.07-0.21)	0.10	0.68
Clinical behavior	0.95 (0.91-0.99)	0.15	< 0.001
Attitude	0.99 (0.97-1.01)	0.49	< 0.001

Discussion

This study reports that knowledge, self-assurance and scientific evidences on the benefits of probiotics are key factors for pediatricians before considering prescribing infant formula, growing up milk and pediatric supplements containing probiotics. Continuous education programs contribute significantly to prescription attitudes of physicians [18].

Medical education, and in postgraduate education particularly on efficacy and safety of treatment, have been shown to be major determinants in prescription attitudes of health care professionals [19]. Knowledge and thus adherence of standard clinical guidelines on treatment which include the rational use of drugs, pharmacovigilance, evidence-based medicine, and pharmaco-economics are essential to improve the prescribing patterns among general practitioners [20,21].

Doctors will adapt their prescribing decision-making process if this is supported by evidence that includes both regulatory and clinical information as well as the analysis of clinical practice data [22]. Availability of clinical data demonstrating the therapeutic efficacy increases confidence among prescribers [22,23]. This study might explain why participants in this study to uphold the evidence-based concept is also reported for prescribing probiotics.

The importance of influence by peers was also reported in this study. Even though the difference was not statistically significant, the high percentage of subjects who would not consider prescribing probiotics related to negative peer influence. Peers share knowledge among colleagues with the aim to deliver specific guidance on appropriate prescribing attitudes [22]. A Study by King et al. showed that peer influence and physician peer networks acted as alternative source of information about clinically advantageous medications when restrictions on pharmaceutical detailing existed, hence factors to determine prescribing pattern [24].

In that context, networks of peers do influence physician prescribing behavior, making social network-based contacts a promising substitute for marketing [25]. Some health care providers have even expressed the view that stronger directions and guidelines from authority organizations would be welcomed to improve their prescribing attitudes [19]. The importance of the opinion of peers was also highlighted in this study.

A reviewed by Majid showed that prescribing decision by physicians is the result of a multitude-intertwined factors. There were 33 factors identified in the review. Physicians' personal attribute was one main important factor, which include clinical experience, specialty, continuous professional development and practice decision. The information source used by physicians have an important role in altering their prescribing decision. Although medical reference books and scientific literatures have a large theoretical importance, colleagues and scientific meeting might useful as additional source information used to prescribe new medicine [26].

To the best of our knowledge, this is the first study to evaluate factors which influencing pediatricians to recommend probiotics in Indonesia. Therefore, the results of this study can be considered as novel findings to better understand the pattern of prescription, particularly toward probiotic products.

However, we also acknowledged limitation of this study is the cross-sectional design that cannot summarize any causality and the subjects are pediatrician who attend the symposium that may not representative for Indonesia. Secondly, there might be another factor influence pediatrician behavior in prescribing probiotics that not included in this study, which shown by lower value of R in multivariate analysis.

Conclusion

Knowledge and scientific evidences are key factors influencing pediatricians to recommend probiotic to their patient. The influence from peer and colleagues were also critical, as it mainly because it was reflecting the collective view of which product should be prescribed and which should not, including probiotic. Further studies and regular education need to be continued for pediatricians to update with the evolving scientific knowledge.

Disclosure

RWB, DK and YW are employee of Nestle Nutrition Institute.

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